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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,779	07/03/2001	Johannes Gijsbertus Antonius Terlingen	702-010166	7918

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EXAMINER	
COUNTS, GARY W	
ART UNIT	PAPER NUMBER
1641	10

DATE MAILED: 06/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/762,779	TERLINGEN ET AL.	
	Examiner	Art Unit	
	Gary W. Counts	1641	

-- Th MAILING DATE of this communication appears on the cover sh t with the correspond nce address --

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25 and 28-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25 and 28-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Status of the claims

Applicant's cancellation of claims 26 and 27 in the amendment filed March 26 2002 is acknowledged and has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 25, 28-34, 37- 40, 44, 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al (EP 0104608) in view of Gardella et al (US Patent 5,627,079).

Dunn et al disclose a method and apparatus for modifying the surface chemistry of a substrate. Dunn et al teach that the attachment and orientation of biologically active molecules can be controlled by varying the surface chemistry of a metal substrate surface by using plasma modification techniques which yield a range of surface chemistries and properties(page 4, lines 1-9). Dunn et al teach that these modified polymeric surfaces were subjected to solutions of biologically active molecules and subsequently tested to demonstrate that attachment and orientation of the large molecule is highly dependent on surface chemistry (page 4, lines 10-16). Dunn et al teach that when the substrate is a metal, it is desirable to include a carbon source, such

as methane to provide a thin organic layer on the inorganic substrate. Dunn et al also teach that the surface of the substrate is irreversibly modified by grafting specific chemical functional groups onto the surface with a plasma of suitable material such as sulfur (page 5, lines 1-25). Dunn et al teach that plasmas can be generated by use of DC or AC sources having a frequency of about 1.0W to about 10 kw. Dunn et al also teach the use of radio frequency (r.f.) sources to generate plasmas (page 9, lines 14-30). Dunn et al disclose that r.f. plasmas are generated at a frequency of from about 1.0 to about 300 MHz at a power to initiate breakdown, such as from about 5 to about 1000 watts at pressures ranging from 0.001 to 10 Torr. The articles are subjected to the r.f. plasma for a period of about 0.1 seconds to about 120 minutes and the plasma treatment can be followed by a quench cycle at or near the surface with pressures ranging from 1 Torr to 760 Torr for time periods of 1 second to 4 hours (page 10, lines 6-19).

Dunn et al differ from the instant invention in failing to disclose the use of gold on the substrate and also fail to teach the substrate being treated in an after-glow.

Gardella et al (US Patent 5,627,079) disclose a method for making refunctionalized oxyfluorinated substrates. Gardella disclose the steps of providing a non-fluorinated base metallic material and modifying the surface of the base material by coating with a fluorocarbon film; and modifying the metallic substrates by coating with a fluorcarbon film and oxyfluorinating the modified surface of the metallic substrate with a gas/vapor plasma mixture and exposing the substrate to at least one radio frequency glow discharge (col 4, lines 50-67). Gardella et al teach that the base materials or

substrates may be comprised of gold (col 8, lines 12-14). This method has increased wettability towards low surface tension liquids, as well as chemically reactive sites allowing for attachment of various chemical functionalities to normally inert surfaces and makes them especially adaptable for membrane applications (col 4, lines32-37).

It would have been obvious to one of ordinary skill in the art to incorporate the use of gold and and the radio frequency glow discharge as taught by Gardella et al into the method of Dunn et al because Gardella et al shows this method has increased wettability towards low surface tension liquids, as well as chemically reactive sites allowing for attachment of various chemical functionalities to normally inert surfaces and makes them especially adaptable for membrane applications.

With respect to the conditions for gas plasma deposition recited in the instant claims, the optimum conditions for discharge power, exposure duration, plasma gas flow, pressure and frequency can be determined by routine experimentation and thus would have been obvious to one of ordinary skill in the art.

2. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al in view of Gardella et al as applied to claims 25-34, 37-40, 44, 45 and 48 above, and further in view of Kolluri et al (US Patent 5,723,219).

See above for teachings of Dunn et al and Gardella et al.

Dunn et al differ from the instant invention in failing to disclose that plasma is deposited from a monomer in gas form.

Kolluri et al teaches the use of a gas monomer in plasma polymerization techniques. Kolluri et al teach that the use of these monomers allow for the

determination of a desired surface chemistry (col 5, lines 31-39).

It would have been obvious to one of ordinary skill in the art to incorporate the monomer as taught by Kolluri into the method of Dunn et al as modified by Gardella et al because Kolluri et al shows that the use of these monomers allow for the determination of a desired surface chemistry.

3. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al in view of Gardella et al as applied to claims 25-34, 37-40, 44, 45 and 48 above, and further in view of Sluka et al (US Patent 5,932,296).

See above for teachings of Dunn et al and Gardella et al.

Dunn et al differ from the instant invention in failing to teach the cleaning of the substrate.

Sluka et al teach the step of cleaning the substrate by means of a pulsed argon plasma before the application of the functional groups to the substrate (col 3, lines 21-24). This process would allow for the removal of any possible surface contamination and allow the surface to be specifically furnished with specific binding sites which are capable of binding directly to an analyte or specific binding partner of interest (col 4, lines 13-15).

It would have been obvious to one of ordinary skill in the art to incorporate the cleaning step as taught by Sluka et al into the method of Dunn et al as modified by Gardella et al because Sluka et al shows that this allows the surface to be specifically furnished with specific binding sites which are capable of binding directly to an analyte or specific binding partner of interest.

4. Claims 41-43, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al in view of Gardella et al as applied to claims 25-34, 37-40, 44, 45 and 48 above, and further in view of Salamon et al (US Patent 5,991,488).

See above for teachings of Dunn et al and Gardella et al.

Dunn et al differ from the instant invention in failing to disclose the use of surface plasmon resonance spectroscopy to investigate reactions between interactive bio/chemical species.

Salamon et al teach that a surface plasmon is an oscillation of free electrons that propagates along a conductor surface of a thin film of metal such as gold. Salamon et al teach that surface plasmon resonance occurs under total internal reflection conditions at the boundary between substances of different refractive indices. Salamon et al teach that an incident light beam is reflected internally within the first medium, its electromagnetic field produces an evanescent wave that crosses a short distance beyond the interface with a second medium. If a thin metal film is inserted at the interface between the two media, surface plasmon resonance occurs when the free electron clouds in the metal layer absorb energy from the evanescent wave and cause a measurable drop in the intensity of the reflected light at a particular angle of incidence that depends on the refractive index of the second medium (col 1, lines 39-57). Salamon et al also teaches that surface plasmon resonance is one of the most sensitive techniques to surface and interface effects and is useful for nondestructive studies of surfaces, interfaces, and very thin layers and is also useful as an optical technique for immunoassays (col 1, lines 32-38).

It would have been obvious to one of ordinary skill in the art to incorporate the surface plasmon resonance spectrometry as taught by Salamon et al into the method of Dunn et al as modified by Gardella et al because Salamon et al teach that it is one of the most sensitive techniques to surface and interface effects and is useful for nondestructive studies of surfaces, interfaces, and very thin layers and is also useful as an optical technique for immunoassays.

Response to arguments

Applicant's arguments filed March 26, 2002 have been fully considered but they are not persuasive.

Applicant argues that neither the teachings of Dunn et al nor Gardella et al suggests a plasma layer deposited directly on the gold surface of the substrate. It is noted that Gardella et al does not teach a plasma layer deposited directly on the gold surface. However, Dunn et al teaches depositing plasma directly to the surface of a substrate (pages 4 and 5). Applicant argues that the Gardella surface substrate must be modified by fluorination or by coating with a fluorocarbon film. Examiner relies on the Gardella reference for the teaching of a gold substrate not the fluorocarbon film. Therefore, it is the Examiner's position that the claims still read on the combined teachings of Dunn et al and Gardella et al. Further, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller,* 642 F.2d 413, 208 USPQ 871 (CCPA); *In re Merck & Co.,* 800F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary W. Counts whose telephone number is (703) 305-1444. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (703) 305-3399. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-4242 for regular communications and (703)3084242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Gary W. Counts
Examiner
Art Unit 1641
June 11, 2002

LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

06/11/02